

NEWS REPORT

National Academy of Sciences National Research Council

VOLUME IV

March-April 1954

NUMBER 2

The United States Program for the International Geophysical Year

JOSEPH KAPLAN

Chairman, United States National Committee, International Geophysical Year

PROGRESS has been made in developing the program of geophysical observations to be carried out during the years 1957-58 as part of the many-nation cooperative undertaking known as the International Geophysical Year (IGY). A Coordinating Group, appointed by the United States National Committee last November (*See NEWS REPORT*, Vol. III, No. 6), convened on January 14 and 15 and prepared drafts of the various programs that might be undertaken by the United States.

Based on these drafts, a tentative program-budget document was prepared and submitted to the National Science Board on January 19 in the hope that the National Science Foundation would undertake the securing of funds. Since then the Coordinating Group, members of the Committee, the Administrative Secretary, and various scientific colleagues have been engaged in the revision of this provisional document, which is essentially fiscal. The meeting of the Committee on April 8 and 9 was devoted to a review of these drafts and the preparation of the United States

program document to be submitted by May 15 to the Secretary-General of the Special Committee set up by the International Council of Scientific Unions. This Special Committee will meet in Rome, October 1-4, to consider all the national proposals.

It is apparent at this time that an appreciable and significant United States program is fast taking shape. Ten fields of activity have been chosen for the IGY: 1) meteorology, 2) latitude and longitude determinations, 3) geomagnetism, 4) the ionosphere, 5) aurora and airglow, 6) solar activity, 7) cosmic rays, 8) glaciology, 9) oceanography, and 10) rocket exploration of the upper atmosphere. The general nature of the proposed activities in each of these fields is suggested by the following summaries.

1) *Meteorology.* The meteorological program is designed to produce significant data in three areas—the lower atmosphere in the Northern Hemisphere, where existing stations will provide data in their normal course of operation; the lower at-

mosphere of the Southern Hemisphere, where some key stations will be established for the IGY; and the upper atmosphere, from which data will be obtained in the rocket program. Three pole-to-pole world lines are proposed for the IGY. The United States line is the 80th meridian west which now terminates in Panama and which will be extended to the South Pole through eight additional stations. The stations in the Antarctic—at the South Pole, Little America, and 80° S., 120° W.—will provide data from this relatively unknown meteorological region which may exercise a disproportionately great impact on world weather. The data from these stations will be useful in transport problems; in determinations of the location, strength, and movement of various jet streams; and in the study of the possible interdependence of the atmospheric circulations of both hemispheres.

2) *Longitude and latitude.* Highly precise longitude and latitude measurements can now be made by the Markowitz technique of direct photography of the moon and stars nearby. With international cooperation it thus becomes possible for the first time during the IGY to triangulate the whole earth. Observations are planned for more than fifteen stations over the earth. The resulting data will yield longitudes and latitudes at all stations and, with the use of existing geodetic nets, the exact distance in miles between all stations can be determined with a precision of 90 feet. The new technique adds greatly to the precision with which changes in the speed of the rotation of the earth can be measured, and the observational material obtained for the geodetic program may be expected to shed new light on the inner constitution of the earth.

3) *Geomagnetism.* Magnetic storms and other little understood transient effects are the chief objectives of the program in geomagnetism. Two temporary observatories will be established at Big Delta and McKinley Park in Alaska, which together with the one at College, Alaska, will form a tripartite array for the recording of electric currents characteristic of the auroral zone. Magnetic field gradients will be studied at College and two outpost sta-

tions. Special rapid-run magnetographs will be employed at seven observatories, and apparatus for the study of magnetic oscillations in the 1–10,000 cycles-per-second range will be installed at four observatories. Two observatories will be set up in the Antarctic, and a semiautomatic station will be installed at Jarvis Island in the Pacific, which is near the junction of the magnetic and geographic equators.

4) *Ionosphere.* Studies of the ionosphere will be carried out in Arctic and Antarctic regions as well as the mid-latitudes of the Northern and Southern Hemispheres. Emphasis will be placed on vertical incidence and scatter soundings, while some work also will be done on ionospheric motions and particle dynamics. Vertical incidence sounding stations will be established where major gaps exist in the chain of ionospheric stations extending from pole to pole. To supplement the specific but geographically restricted data provided by vertical incidence measurements, fixed-frequency and multifrequency scatter sounding stations will be established at some twelve sites. These will yield less specific but spatially extensive data.

5) *Aurora and Airglow.* Four principal problems in this field will be studied: a) airglow latitude intensity profile; b) aurora latitude spectrum and frequency profile; c) auroral longitude spectrum, frequency, and continuity profile; and d) Northern-Southern Hemisphere correlations. Visual synoptic data will be collected through a network of 30 stations in the United States and Alaska. The motions of charged particles at auroral heights and the absorption of interstellar radio waves passing through the aurora will be studied using radio astronomic techniques. A network of 17 stations will be concerned with radio reflections from the aurora, and 26 stations will form a spectrographic patrol, photographing the distinctive radiation emitted by the aurora and airglow. Roach-type photometers will be used at a number of stations in both the Northern and Southern Hemispheres to scan the sky and measure the intensity of airglow.

6) *Solar Activity.* Flare patrols are in operation at some five American and fifteen foreign observatories. It is important that

every solar flare be observed and recorded for correlation with geomagnetic, ionospheric, auroral, and cosmic ray variations and disturbances. This will require additional observers and coordination among the various observatories. Several special studies also will be made, such as the determination of the light intensity of solar flares by measurements of the red line emitted by hydrogen atoms and observations of the inner part of the corona using a special white-light photometer. One of the immediate uses to which solar flares will be put during the IGY has to do with the Warning Service Program. While regularly planned measurements will go on during the IGY period, it is especially important that experiments be conducted simultaneously throughout the world during periods of unusual solar activity. The Warning Service will collect data from all fields and will broadcast the onset or presence of unusual geophysical effects—solar flares, magnetic storms, ionospheric fade-outs, and blackouts, etc.—signaling the observers to proceed with their special pre-established studies.

7) *Cosmic Rays*. The program calls for the investigation of three types of problems: a) exploration of the variations in mass and energy of primary and cosmic radiation; b) exploration of the variations in cosmic radiation with both altitude and latitude; and c) investigations of the long-time fluctuations in the neutron component of cosmic rays. Some 130 balloon flights are planned for six sites in the Northern and Southern Hemispheres, fixed high altitude stations will be used, and aircraft flights are planned at constant altitudes along a longitudinal meridian.

8) *Glaciology*. Four studies are contemplated, two in the Northern Hemisphere and two in the Antarctic. One study is expected to be concentrated in the vicinity of the Juneau Ice Field Project of the American Geographical Society. Studies of portions of the Ice Cap and fringe area in Greenland will be undertaken in cooperation with Danish scientists associated with the IGY. In the Antarctic, a group will study the Ross Shelf and survey the 400-mile front of this glacial feature, while another group will secure glaciological

data from the high polar plateau at the South Pole.

9) *Oceanography*. Tide gauges, surge recorders, and similar automatic recording devices will be installed at some forty sites in the Southern Hemisphere, Antarctica, and at islands in the Pacific. The data collected will represent valuable additions to those available from existing stations. A second major area of activity during the IGY will be the study of the sub-Antarctic waters. The structure and dynamics of currents, as well as other aspects of this oceanic region, will be explored intensively between 30° and 60° south latitude. Four oceanographic research vessels are expected to participate in the study; and, while the Antarctic Circumpolar Current will be the major topic, associated experiments in obtaining submarine profiles, sediment cores, magnetic fields, plankton samples, and seismic studies will be undertaken.

10) *Rocket Exploration*. Rockoons (small balloon-launched rockets) and Airobee rockets will be launched from sites in New Mexico, Greenland, Canada, and Alaska. Each rocket will carry a variety of instruments to measure a large number of such phenomena and quantities as atmospheric pressure, temperature and density, magnetic fields, night and day airglow, ultraviolet light and X-rays, auroral particles, ozone distribution, ionospheric charge densities, and cosmic radiation. These direct results will be integrated and correlated with the large bodies of indirect data provided by other techniques in the relevant geophysical fields. The launching of rockets at special times (World Days) of unusual solar or magnetic activity (or quiet) should be particularly fruitful.

It can be seen from the brief review of this United States program that the IGY will attempt, at least in part, to supplement with short-time geophysical observations made over as much of the surface of the earth as practicable the present long-time programs on which most of modern geophysics is based. It is hoped that prior to the meetings of several scientific groups in Europe during the summer of 1954 all interested scientists will give the United States National Committee the benefit of their comments, criticisms, and suggestions.

Quartermaster Research and Development Program on Radiation Sterilization of Foods

S. A. GOLDBLITH

Massachusetts Institute of Technology

IN JUNE 1953, the National Academy of Sciences—National Research Council Advisory Board on Quartermaster Research and Development, through its Committee on Foods, was called upon by the Quartermaster Corps for guidance in the initiation and continuance of a research program directed toward solving the technical problems associated with radiation sterilization of foods. This process offers many potential advantages to the military in providing safe, acceptable, and nutritious foods to troops operating on a global basis.

While the lethal effects of ionizing radiations on microorganisms have been known almost since the discovery of X-rays by Roentgen, it has been only within the past decade that research has been directed towards the possible industrial utilization of this phenomenon for sterilization of foods and drugs. In this process sterilization is effected without the application of heat. The recent development of tremendous sources of ionizing energy as a result of the Manhattan project, in no small measure, was responsible for the investigation of gamma rays for a similar purpose.

The sponsorship by the Atomic Energy Commission in 1950 of a coordinated program of effort directed towards utilization of ionizing energy from the isotopic by-products of nuclear fission was in a large measure responsible for increased effort in the field of "cold sterilization." This is characterized by an increase in the number of laboratories active in this field from three in 1950 to about seven in 1953. During the period 1951–53, the Quartermaster Corps has been sponsoring research in radiation sterilization at the Food Technology Laboratories of the Massachusetts Institute of Technology.

Early in 1953, the Research and Development Division of the Office of the Quartermaster General made a detailed analysis of the technical status of radiation sterilization with a view toward ascertaining the course of action to be taken. The report indicated the great potentialities of radiation sterilization for improving rations and at the same time saving a great deal of money and objectively pointed out the research and development problems remaining to be solved before the process could be deemed commercially feasible.

The report further recommended that the Quartermaster Corps, as the responsible agency for food research in the Department of Defense, assume the leadership of and responsibility for the development of the program of radiation sterilization and recommended a \$6,000,000 program for a five-year period to carry out the objective.

The Committee on Foods under the chairmanship of G. M. Dack, University of Chicago, approved the program and set up an ad hoc committee on radiation sterilization to organize a symposium to further evaluate the present status of radiation sterilization. The symposium was held on June 25, 1953, at the Massachusetts Institute of Technology in Cambridge, Mass.

With L. E. Clifcorn of the Continental Can Company as chairman, the ad hoc committee summarized the results of the symposium and recommended the pursuance of the radiation sterilization program of the Quartermaster Corps cited above and the close coordination of this program by a subcommittee to be appointed by the Academy—Research Council Advisory Board on Quartermaster Research and Development.

During July 1953, the Subcommittee on Radiation Sterilization was appointed with the following membership: B. E. Proctor, Massachusetts Institute of Technology, *Chairman*; Joseph Butts, United States Atomic Energy Commission; L. E. Clifcorn, Continental Can Company; G. M. Dack, University of Chicago; C. G. King, The Nutrition Foundation; H. S. Mitchell, Swift and Company. The Subcommittee has met three times since its formation—on August 26, October 16, and November 20, 1953, and has recommended to the Quartermaster Corps a detailed program of research on radiation sterilization of foods based on the monetary allocation of \$600,000 already received for the fiscal year 1954.

This research program is primarily an external one, and most of the work will be done by contract with university and industrial research laboratories. To date, contractual arrangements have been discussed with at least eight institutions for work to be accomplished during the remainder of the fiscal year 1954 and during the fiscal year 1955. Internal coordination of this program is the responsibility of the Food Laboratories of the Quartermaster Food and Container Institute for the Armed Forces. The Office of the Surgeon General, the Chemical Corps, the Atomic

Energy Commission, and other Government agencies are providing close collaboration.

To date, one deterrent to the commercial application of cold sterilization has been the development of undesirable side effects produced by radiations. These include changes in color, in odor, and in flavor. The bulk of the research effort for the first year, therefore, has been directed toward a solution of these problems. Toward this end, two types of research programs have been developed: *a*) a long-range fundamental study to isolate and identify the compounds produced by the radiation process which are responsible for the off-flavors produced, and *b*) a technological program designed to investigate the potentialities of the known technological processing variables in obviating these undesirable side reactions.

Secondary effort at this time is directed toward establishing the "wholesomeness" of the process and toward investigation and development of sources of ionizing energy. The program is just beginning, and it is hoped that by the combined effort of some of the best talent in this new field, under the close coordination, advice, and counsel of the National Academy Sciences—National Research Council, that substantial progress will be reached in the next year.

SCIENCE NEWS

ANNUAL MEETING NATIONAL ACADEMY OF SCIENCES

The ninety-first Annual Meeting of the National Academy of Sciences will be held in Washington, April 26–27, at the Academy Building. The sessions will open with a brief business meeting on Monday morning, April 26, and all day Tuesday will be devoted to the election of officers and new members and to general Academy business and reports. Sessions for the presentation of scientific papers are scheduled for Mon-

day, April 26, and Wednesday, April 28. These scientific sessions are open to the public.

In addition to about forty contributed papers, three symposia have been planned: 1) The Structure and Function of Nucleic Acids, Linus Pauling, California Institute of Technology, *Chairman*; 2) High Energy Particle Accelerators, I. I. Rabi, Columbia University, *Chairman*; and 3) Some Scientific Aspects of the International Geophysical Year, L. V. Berkner, Associated Universities, Inc., *Chairman*.

On Monday evening there will be a special meeting in the auditorium of the Academy building for the presentation of medals. A reception for members, their wives, and guests and a program of scientific demonstrations and exhibits will follow the formal presentations.

The Academy dinner for members and guests will be held Tuesday evening, April 27, at the Hotel Washington. On Wednesday evening a buffet supper for members only will be served in the auditorium of the Academy building to provide an opportunity for informal discussion of Academy activities and other matters of current interest.

FOREIGN RESEARCH SCIENTISTS PROGRAM

The second group of awards under the Foreign Research Scientists Program has been made. A full description of this program may be found in *NEWS REPORT*, Volume III, Number 6; the first awards were announced in Volume IV, Number 1. The following list indicates the country of origin of the fellowship recipients as well as the field and location of their research:

From Greece

- George Catravas, Organic chemistry—University of Chicago, with H. S. Anker.
Demetrius Galanos, Food chemistry—University of Illinois, with H. E. Carter.
Andreas Granitsas, Physiology—Columbia University, with Earl T. Engle.
Theodore Yannakopoulos, Physical chemistry—National Bureau of Standards, with Abner Brenner.
Constantine Zerlentis, Plant geography and ecology—Oklahoma Agricultural and Mechanical College, with Jack R. Harlan.

From the Netherlands

- Dick de Zeeuw, Horticulture—Purdue University, with A. C. Leopold.
Jacob Pieter Murre, Mathematics—University of Chicago, with A. Weil.

From Norway

- Arne Jensen, Organic chemistry—Yale University, with Werner Bergmann.
Haakon Olsen, Physics—Cornell University, with Hans A. Bethe.

ACADEMY-COUNCIL LECTURE SERIES

The National Academy of Sciences—National Research Council lecture series has continued to present distinguished scientists from abroad and from the United States. The speakers who have appeared recently and the titles of their lectures are as follows:

February 16, "Recent Developments in the Study of the Biosynthesis of Enzymes," by Jacques Monod, Chef de Service, Institut Pasteur, Paris, France.

March 2, "Transphosphorylation Reactions Involving Adenosine and Inosine Phosphates," by H. A. Krebs, Professor of Biochemistry, University of Sheffield, England, and Nobel Laureate in Physiology and Medicine, 1953.

March 30, "Ultra Fractionation of the Serum Proteins," by John G. Kirkwood, Sterling Professor of Chemistry, Yale University.

SYMPOSIUM ON ATHEROSCLEROSIS

In response to a request from the United States Air Force, which like its sister services has evinced a growing concern about the effects of the aging process on career personnel, the Division of Medical Sciences, through its Subcommittee on the Cardiovascular System, sponsored a Symposium on Atherosclerosis on March 22 and 23. Irvine H. Page of the Cleveland Clinic presided. In 23 papers, exclusive of the introduction and summaries, the participants reviewed current knowledge relating to this most prevalent of degenerative diseases. The subjects of the papers ranged from the anatomy and physiology of the blood vessel wall, through its responses to injury and other abnormal influences, to the role of nutrition and the metabolism of lipids and lipoproteins. One section was devoted to the possible application of new techniques involving polarization optics, X-ray diffraction and absorption, and electron microscopy, to the study of blood vessels. It is believed that this survey has helped to clarify the present status of the problem and has pointed up the directions in which future research will offer particular promise.

BLOOD AND RELATED PROBLEMS

In January the Subcommittee on Blood and Related Problems held two significant conferences involving British as well as American investigators in this field. The first of these, held on January 26, was a preliminary meeting to explore the feasibility of establishing a national reference standard for hemoglobin determinations which would be permanent and reproducible and would serve as a calibration standard for the divergent methods of measurement now in use. The British have adopted a preparation of whole blood standardized in terms of carboxyhemoglobin content. In this country the weight of opinion seems to favor standardization in terms of cyanmethemoglobin.

As a part of its regular meeting on the following day, the Subcommittee conducted a symposium on the preservation of red blood cells in glycerol at low temperatures. Red blood cells preserved in acid-citrate-dextrose (ACD) solution at 4° to 10° C. under the optimum storage conditions now in general use remain viable for only 21 days. The glycerol-freezing method promises prolongation of the useful storage life of separated red cells to 6 months or more and appears to be the most promising development since the introduction of ACD solution during World War II. It became clear at the meeting that several fundamental questions remain to be answered before practical application of this method could be developed.

ARTIFICIAL LIMBS

The Advisory Committee on Artificial Limbs has recently initiated a new periodical report under the title *Artificial Limbs: A Review of Current Developments*. Designed to convey to all workers in the field of rehabilitation the latest results of research in prosthetics, it is published in partial fulfillment of a contract between the National Academy of Sciences and the United States Veterans Administration. The first issue carries a January dateline, and present plans call for issues regularly in January, May, and September of each year. The reports are distributed without charge, both in the United States

and abroad, to physicians, orthopedic surgeons, prosthetists, therapists, insurance carriers, Federal and State rehabilitation officers, and all others concerned with the rehabilitation of amputees.

Authors of the various articles are individuals closely associated with the program of the Advisory Committee on Artificial Limbs. The January issue, devoted almost entirely to upper-extremity prosthetics, includes material by F. S. Strong, Jr., Executive Director, Advisory Committee on Artificial Limbs; Craig L. Taylor, Professor of Engineering and Biophysics at the University of California; Charles O. Bechtol, Assistant Clinical Professor of Orthopedic Surgery at the University of California and Western Area Consultant for Prosthetic and Orthopedic Clinics of the Veterans Administration; Maurice J. Fletcher, Director of the Army Prosthetics Research Laboratory at Walter Reed Hospital; and Lester Carlyle, engineer for the Artificial Limbs Research Project of the University of California.

Artificial Limbs is edited by Bryson Fleer, editor of several Academy-Research Council books and reports. A. Bennett Wilson, Jr., Executive Secretary of the Advisory Committee, serves as technical consultant. Persons interested in receiving *Artificial Limbs* are invited to write to the Committee at the National Academy of Sciences-National Research Council.

CONFERENCE ON ANTIBIOTIC RESERVES

Recently, the Federal Civil Defense Administration requested the Division of Medical Sciences to review the rapidly changing field of antibiotic therapy and bring up to date the recommendations made in 1951 concerning the stockpiling of suitable preparations for emergency use. A conference for this purpose was held on February 15, in conjunction with a meeting of the Division's Subcommittee on Infectious Diseases and Chemotherapy. Two new antibiotics, tetracycline and erythromycin, were added to the recommended list, and the double salt of streptomycin was removed. Still unsettled, pending completion of current experiments, is the status of penicillin in oil with aluminum monostearate.

CLIMATIC RESEARCH COMMITTEE SURVEY

The newly reorganized Climatic Research Committee of the Building Research Advisory Board (BRAB), whose members individually represent most of the major design professions and businesses of the building industry, is beginning a survey to determine what kind of information on climate and weather is needed by the various segments of the building industry.

At a meeting held at the United States Weather Bureau on February 5, F. W. Reichelderfer, Chief of the Weather Bureau, pointed out that until the Bureau learned from the Committee what type of information the industry needed, the Bureau could not supply the required data in a form usable by all parts of the industry. The Weather Bureau staff described the various kinds of publications currently issued by the Bureau to supply climatic and weather data to the public. Six of these were selected as being of particular interest to the building and construction industry.

The Committee members outlined the general usefulness of climatic data in their own areas of specialization, showing that the type of information needed varies greatly from the precise data used in air conditioning and heating design to the forecasting of extreme conditions that may affect construction operations on the site.

The Committee members agreed to conduct the exploratory survey themselves in collaboration with the BRAB staff. Each member is devising his own type of survey in order to elicit the kind of information needed by his own organization. When the returns of this preliminary survey are received, a subcommittee will be appointed to analyze the results and determine what further survey operations may be necessary.

The present membership of the Committee is as follows:

- MILES COLEMAN, (BRAB) House Beautiful Climate Control Project, *Chairman*
J. J. DRUMMOND, Consolidated Edison Company of New York, Inc.
JOSEPH EHLERS, American Society of Civil Engineers
JOHN EVERETTS, JR., American Society of Heating and Ventilating Engineers

- PETER B. GORDON, Heating, Piping and Air Conditioning Contractors National Association
LEONARD L. HUNTER, Public Buildings Service, United States General Services Administration
T. F. MALONE, American Meteorological Society
MEADE PALMER, American Society of Landscape Architects
GAYLE B. PRIESTER, American Society of Refrigerating Engineers
JOHN R. SCHREINER, Air Conditioning and Refrigeration Institute
WELTON SNOW, Associated General Contractors of America
WALTER A. TAYLOR, American Institute of Architects
THOMAS H. URDAHL, Consulting Engineer, Washington, D. C.
CLYDE J. VERKERKES, National Association of Home Builders
RICHARD P. WHITE, American Association of Nurserymen
H. C. S. THOM, United States Weather Bureau, as liaison representative for the Weather Bureau

SCIENCE IN UNESCO

The Committee on Science in UNESCO of the Office of International Relations held its eleventh meeting on February 15 in Washington to examine the UNESCO Natural Sciences program and budget for 1955-56.

The Committee emphasized the need for strengthening the program in *Teaching and Dissemination of Science* in underdeveloped areas of the world. It believed that this should be done even if such action required a reduction in the support given to *Science Cooperation Offices*. The Committee reviewed all items in the program and made a number of specific recommendations, some of them calling for significant changes in the draft program prepared by the UNESCO secretariat. All recommendations have been forwarded to the Program Committee of the United States National Commission for UNESCO.

Committee members urged that United States scientists take a more active part in international scientific programs sponsored by UNESCO. They agreed to prepare journal articles on various aspects of the Natural Sciences Program and requested the Academy-Research Council to resume publication of the *Bulletin on Science in UNESCO* in order to provide a much needed condensed report of UNESCO's activities in international science.

BIOLOGY COUNCIL

What are the trends, strains, and needs in the biological sciences? That is the principal question to be studied and, as far as possible, to be answered by the new Biology Council of the Division of Biology and Agriculture.

Supported by Government agencies interested in improving their biological research, the Biology Council is composed of 16 eminent scientists who were carefully selected to cover the whole field from molecular biology to environmental biology. They were chosen for their knowledge and experience, their broad and diversified interests, and their willingness to give freely of their time and talents for the advancement of biology. They were assembled not to advise on specific questions put to them by their sponsors but rather to choose for themselves the subjects that they will study—subjects believed by them to be of the greatest importance to the future development of biology.

The facts and opinions emerging from the Biology Council will be used not only by the sponsors but also by any others who want guidance on biological strategy. The guidance of the Council will be sought in planning the policies for other activities in the Division of Biology and Agriculture. The functions of the Council are strictly advisory, and the utilization of its advice is entirely voluntary. To emphasize this point, Paul Weiss, Chairman of the Division of Biology and Agriculture, likened the product of the Biology Council to a road map available for use, if desired, by the biological traveler.

The first full meeting of the Biology Council was held on January 22 and 23. It agreed to study, as related to biology, such subjects as the conceptual framework of the life sciences, education, research trends, support of research, underdeveloped areas, biological collections, exploitation of biological knowledge, personnel, and public relations. Education was regarded as of paramount importance for the future development of biology and a subject so complex that the Council would need the help of a special committee on educational policies. Such a committee is now being

organized for continuous studies of educational problems. The subject of biological communications was assigned to the existing Committee on Publications of the American Institute of Biological Sciences. All other subjects will be studied by the Council with the help of a network of correspondents yet to be organized. The idea is to funnel information and opinions from different parts of the United States into the secretariat of the Biology Council, where it would be prepared for consideration. Thus, the latter would draw not only upon its own knowledge and experience, but also upon that of many other competent biologists.

The personnel of the Biology Council is as follows:

- PAUL WEISS, Chairman, Division of Biology and Agriculture, National Academy of Sciences—National Research Council, *Chairman*
STANLEY A. CAIN, Professor of Conservation, University of Michigan
JACKSON W. FOSTER, Professor of Bacteriology, University of Texas
RALPH W. GERARD, Professor of Neurophysiology, Neuropsychiatric Institute, University of Illinois
DAVID R. GODDARD, Chairman, Department of Botany, University of Pennsylvania
RICHARD GOODWIN, Professor of Botany, Connecticut College
CARYL HASKINS, Director, Haskins Laboratories, New York
STERLING B. HENDRICKS, Head Chemist, Division of Soil and Plant Relationships, Agricultural Research Service, United States Department of Agriculture
G. EVELYN HUTCHINSON, Professor of Zoology, Yale University
BERWIND P. KAUFMAN, Department of Genetics, Carnegie Institution of Washington
ERNST MAYR, Alexander Agassiz Professor of Zoology, Harvard College
F. O. SCHMITT, Chairman, Department of Biology, Massachusetts Institute of Technology
EDWARD L. TATUM, Professor of Biology, Stanford University
HAROLD B. TUKEY, Head, Department of Horticulture, Michigan State College
SHERWOOD L. WASHBURN, Chairman, Department of Anthropology, University of Chicago
PERRY W. WILSON, Professor of Bacteriology, University of Wisconsin

Karl S. Lashley, Director of the Yerkes Laboratories of Primate Biology, Inc., Orange Park, Fla., accepted the appointment to serve on the Biology Council and attended the first meeting, but later he was compelled to withdraw because of illness.

CONFERENCE ON COASTAL GEOGRAPHY

A Conference on Coastal Geography was held at the National Academy of Sciences-National Research Council on February 18 under the joint sponsorship of the Committee on Geography Advisory to the Office of Naval Research (ONR) and the Geography Branch, Office of Naval Research. The purpose of the conference was to present some of the research on the physical geography of coastal areas being conducted by a group of ONR contractors as particularly related to naval and other military activities. The scientists on these projects discussed their research in the light of trafficability, terrain analysis, shoreline configuration, coastal classification, near-shore bottom conditions, and photo interpretation.

The morning session was devoted largely to work in the Gulf Coast area. Richard J. Russell, Robert Treadwell, and William McIntyre, all of Louisiana State University, discussed various aspects of the history and development of the Mississippi River Delta. It was pointed out that the muds and sands of the Gulf Coast beaches are continually shifting and that this fact is significant with respect to sedimentation and geomorphological problems in the history of the growth of the delta. Archeological data have been used to date beaches and stages of growth of the delta. W. Armstrong Price of the Agricultural and Mechanical College of Texas discussed the wave energy classification of features developed on the continental shelf of the Gulf Coast and presented basic data and theory for correlations of such features across the continental shelf. The work of the Virginia Geographical Institute, University of Virginia, on classification of coast lines in the Mediterranean area was presented by Charles V. Crittenden and Geza Teleki. Much of their work is based on photo interpretation techniques.

The afternoon session was devoted to a more general group of topics. The problem of sand dune growth and migration and its relation to military installations was discussed by H. T. U. Smith of the University of Kansas. His study demonstrated the desirability of combining aerial photo-

graphs with topographic maps in geomorphological investigations. Using the coast of Colombia as an example, Robert C. West of Louisiana State University showed some of the effects on and controls of beach development by mangrove swamps along the Pacific Coast. That beach profiles both on and near shore are not static but can change very significantly between successive high tides or following storms was brought out by Henry C. Stetson of the Woods Hole Oceanographic Institution. Dr. Stetson has been studying the processes of beach profile changes in the Cape Cod area. W. C. Putnam of the University of California closed the conference with a summary of his work to date on the overall classification of coasts. He pointed out that there is need for a classification of coasts which the non-scientific user can apply to his everyday problems without being concerned with the questions of the origins of the several coastal types.

Richard J. Russell, Chairman-Designate of the Division of Earth Sciences, served as chairman of the conference, and Louis O. Quam and Evelyn Pruitt of ONR assisted in planning the program.

SMITH-MUNDT LECTURESHIP PROGRAM

At the request of the Department of State, the Conference Board of Associated Research Councils, through its Committee on International Exchange of Persons, has accepted the responsibility for nominating experienced American university lecturers for a limited number of teaching opportunities at institutions of higher education in countries not now participating in the Fulbright Program. These opportunities are made possible by the United States Information and Educational Exchange Act (Smith-Mundt) of 1948 and the cooperation of the host countries and institutions.

The participating countries will include Brazil, Cuba, Guatemala, Iran, Israel, Korea, Mexico, Turkey, and Yugoslavia. There will be about forty openings for American lecturers in the sciences and the humanities both for the full academic year and for shorter terms during 1954 and 1955. The Autonomous National University of Mexico, for example, has requested

lecturers in physics, chemistry, mathematics, and geology for summer courses. The lecturers selected for these openings will receive an appropriate salary, a maintenance allowance, and transportation. The grants will be paid partly in dollars and partly in the currencies of the participating countries.

Theodore T. Dombas, formerly with the Institute of International Education in New York, is the administrative officer for the program. Anticipating future requests for nominations under the Smith-Mundt Act, Dr. Dombas is compiling a register of American professors who are interested in lecturing abroad in either the immediate or the indeterminate future and who would welcome notices of opportunities occurring in their special fields. Correspondence from such professors is invited.

Specific information about opportunities and on application procedure may be obtained from the Committee on International Exchange of Persons, 2101 Constitution Avenue, Washington 25, D. C.

INTERNATIONAL GEOPHYSICAL YEAR

On December 1, 1953, Hugh Odishaw was appointed Administrative Secretary of the U. S. National Committee for the International Geophysical Year. Prior to this appointment he was Assistant to the Director of the National Bureau of Standards, a position which he held for more than seven years. During World War II, Mr. Odishaw was a member of the staff of the Westinghouse Electric Corporation, where he was concerned primarily with the radar program of the Westinghouse Research Laboratories; later, under contract to the Radiation Laboratory at the Massachusetts Institute of Technology, he was concerned with radar operations in the European Theater.

In his new post, Mr. Odishaw will assist the U. S. National Committee in developing its program of geophysical observations and in coordinating efforts of the various participating groups. Correspondence concerning the work of the Committee may be addressed to Mr. Odishaw at the National Academy of Sciences.

UNESCO ADVISORY COMMITTEE ON SCIENTIFIC RESEARCH

The International Advisory Committee on Research in the Natural Sciences will meet in Paris, April 12-15. This Committee was established by action of the Executive Board of UNESCO in accordance with resolutions adopted by the Seventh General Conference of UNESCO. Representatives of twenty-two national councils and centers of scientific research met at Paris on July 6-7, 1953, to discuss plans for the establishment of the Committee. United States was represented by Wallace W. Atwood, Jr., Director of the Office of International Relations, National Academy of Sciences-National Research Council, and C. Eugene Sunderlin, Deputy Director of the National Science Foundation. See NEWS REPORT, Volume III, Number 4.

The functions of the new committee are "to advise the Director-General on research and related matters in the Natural Sciences programme of Unesco and on the promotion of international cooperation in scientific and technological research." The terms of reference state that the "Committee shall be composed of fifteen members, of whom twelve, of different nationalities, shall be representatives of the national research organizations, sponsored or recognized by the governments of the Member States concerned, for the promotion and coordination of their research activities. The other three members shall be representatives of the following international non-governmental organizations: International Council of Scientific Unions, Council for International Organization of Medical Sciences, Union of International Engineering Organizations."

The Director-General has invited the following countries to be represented initially on the Advisory Committee: Australia, Brazil, Denmark, Egypt, France, India, Israel, Japan, Mexico, United Kingdom, United States of America, and Yugoslavia. If any of these countries are unable to accept membership, the following shall be considered: Canada, German Federal Republic, Italy, Pakistan, and the Philippines. Wallace W. Atwood, Jr., Director of the Office of International Relations, will be the United States member.

COOPERATING SOCIETIES

The following schedule of meetings of Societies cooperating with the National Research Council was prepared by the Librarian of the Academy-Council from information supplied by the Societies. For details regarding a specific meeting, please write directly to the Society Secretary.

January

28-30 American Physical Society, *New York City*

February

15-18 American Institute of Mining and Metallurgical Engineers, *New York City*

March

7-8 Wildlife Society, *Chicago, Ill.*
22-24 American Congress on Surveying and Mapping, *Washington, D. C.*
22-25 Institute of Radio Engineers, *New York City*
23-Apr. 1 American Chemical Society, *Kansas City, Mo.*
26-27 Seismological Society of America, *Seattle, Wash.*

April

5-9 American College of Physicians, *Chicago, Ill.*
5-10 American Crystallographic Association, *Cambridge, Mass.*
7 American Association of Anatomists
8-10 American Association of Pathologists and Bacteriologists, *Philadelphia, Pa.*
11-16 American Association of Immunologists, *Atlantic City, N. J.*
11-16 American Physiological Society, *Atlantic City, N. J.*
11-16 American Society of Biological Chemists, *Atlantic City, N. J.*
11-16 American Society for Experimental Pathology, *Atlantic City, N. J.*
11-16 American Society for Pharmacology and Experimental Therapeutics, *Atlantic City, N. J.*
12-14 Association of American Geographers, *Philadelphia, Pa.*
12-15 American Association of Petroleum Geologists, *St. Louis, Mo.*
12-16 American Institute of Nutrition, *Atlantic City, N. J.*
12-16 Society of Exploration Geophysicists, *St. Louis, Mo.*
12-17 Society of Economic Paleontologists and Mineralogists, *St. Louis, Mo.*
19-23 American Ceramic Society, *Chicago, Ill.*

April

21-23 Industrial Research Institute, *San Francisco, Calif.*
28-30 American Meteorological Society, *Baltimore, Md.*
28-30 American Surgical Association, *Cleveland, Ohio*
29-May 1 American Physical Society, *Washington, D. C.*

May

2-6 Electrochemical Society, *Chicago, Ill.*
2-7 Society of American Bacteriologists, *Pittsburgh, Pa.*
3 American Society for Clinical Investigation, *Atlantic City, N. J.*
3-5 American Geophysical Union, *Washington, D. C.*
3-7 American Psychiatric Association, *St. Louis, Mo.*
4-5 Association of American Physicians, *Atlantic City, N. J.*
4-7 Society for Pediatric Research, *Buck Hill Falls, Pa.*
26-27 American Iron and Steel Institute, *New York City*

June

13-18 American Society for Testing Materials, *Chicago, Ill.*
14-16 American Neurological Association, *Atlantic City, N. J.*
14-17 American Society of Mammalogists, *Rocky Mountain National Park, Colo.*
14-18 American Society for Engineering Education, *Urbana, Ill.*
17-18 Econometric Society, *Pasadena, Calif.*
20-23 American Astronomical Society, *Ann Arbor, Mich.*
21-25 American Institute of Electrical Engineers, *Los Angeles, Calif.*
21-25 American Medical Association, *San Francisco, Calif.*
22-24 American Dairy Science Association, *State College, Pa.*
23-26 Acoustical Society of America, *New York City*
23-26 Society for the Study of Development and Growth, *Hanover, N. H.*

July

Poultry Science Association, *Lafayette, Ind.*

11-14

American Society of Refrigerating Engineers, *Seattle, Wash.*

August

23-26

American Veterinary Medical Association, *Seattle, Wash.*

25-27

American Phytopathological Society, *Estes Park, Colo.*

September

3-8

American Psychological Association, *New York City*

5-8

Mycological Society of America, *Gainesville, Fla.*

5-9

American Society of Ichthyologists and Herpetologists, *Gainesville, Fla.*

5-9

Biometric Society, Eastern North American Region, *Gainesville, Fla.*

5-9

Botanical Society of America, *Gainesville, Fla.*

5-9

Genetics Society of America, *Gainesville, Fla.*

6-8

American Society for Horticultural Science, *Gainesville, Fla.*

6-8

American Society for Pharmacology and Experimental Therapeutics, *Charlottesville, Va.*

6-8

Ecological Society of America, *Gainesville, Fla.*

8

American Society of Plant Physiologists, *Gainesville, Fla.*

8-10

American Physiological Society, *Madison, Wis.*

10-13

Econometric Society, *Montreal, Canada*

12-17

American Chemical Society, *New York City*

13-16

Illuminating Engineering Society, *Atlantic City, N. J.*

13-25

Instrument Society of America, *Philadelphia, Pa.*

21-24

American Roentgen Ray Society, *Washington, D. C.*

26-30

Institute of Traffic Engineers, *Kansas City, Mo.*

October

4-7

American Academy of Pediatrics, *Chicago, Ill.*

14-16

Optical Society of America, *Los Angeles, Calif.*

18-22

American Society of Civil Engineers, *New York City*

21

Engineering Foundation, *New York City*

October

24-27

Society of American Foresters, *Milwaukee, Wis.*

25-28

American Society of Agronomy, *Minneapolis, Minn.*

25-28

Soil Science Society of America, *Minneapolis, Minn.*

31-Nov. 5

American Welding Society, *Chicago, Ill.*

November

1-3

Society of Vertebrate Paleontology, *Los Angeles, Calif.*

1-5

Geological Society of America, *Los Angeles, Calif.*

3-6

American Society for Metals, *Chicago, Ill.*

4-6

American Society of Tropical Medicine and Hygiene, *Memphis, Tenn.*

4-6

American Academy of Tropical Medicine, *Memphis, Tenn.*

8-10

American Society of Parasitologists, *Memphis, Tenn.*

8-11

Mineralogical Society of America, *Los Angeles, Calif.*

8-12

American Dental Association, *Miami, Fla.*

10-13

Paleontological Society, *Los Angeles, Calif.*

26-27

Society of Naval Architects and Marine Engineers, *New York City*

27-31

American Society of Animal Production, *Chicago, Ill.*

December

6-9

American Society of Zoologists, *Chapel Hill, N. C.*

12-15

Entomological Society of America, *Houston, Tex.*

27-29

American Institute of Chemical Engineers, *New York City*

27-30

American Mathematical Society, *Pittsburgh, Pa.*

27-30

Econometric Society, *Detroit, Mich.*

27-30

Institute of Mathematical Statistics, *San Francisco Bay Area*

28

Society of Systematic Zoology, *Berkeley, Calif.*

28-30

Association for Symbolic Logic, *Pittsburgh, Pa.*

30

American Anthropological Association, *Ann Arbor, Mich.*

Mathematical Association of America, *Pittsburgh, Pa.*

RECORD OF MEETINGS

January

- 4-5 Committee on International Exchange of Persons
- 6 Advisory Committee, Federal Construction Council
- 8 Committee on Naval Medical Research
Advisory Committee, Federal Construction Council, Task Group T-5
- 11-15 Highway Research Board
- 12 Gun Liner Sub-panel
Committee on Tables of Constants and Numerical Data, Nuclear Data Group
- 12-13 Conference on Elastomer Research
- 13 Committee on Tropical Housing and Building
Gun Liner Panel
- 14 Committee on Development of Substitutes for Waterfowl Feathers and Down
- 16 Committee on Photobiology
Committee on Highway Safety Research
- 16-17 Screening Committee for Postdoctoral Fellowships in Mathematics
- 18 Committee on Growth
Division of Medical Sciences, Executive Committee
Committee on Ship Steel
- 19 Federation of American Societies for Experimental Biology, Executive Board
Committee on Cancer Diagnosis and Therapy
- 20 Committee on Construction and Use of Precise Globes and Spherical Maps
Advisory Committee, Federal Construction Council, Task Group T-4
Ad hoc Policy Committee on Artificial Sweeteners, *New York City*
- 22 Committee on Development of Substitutes for Waterfowl Feathers and Down
- 22-23 Biology Council
Committee on Drug Addiction and Narcotics, *Rahway and Nutley, N. J., and New York City*
- 23 U. S. National Committee of the International Union against Cancer, Program Panel
- 23-24 Screening Committee for Postdoctoral Fellowships in Chemistry
- 24 Division of Biology and Agriculture, Committee on Educational Policies

January

- 26 Committee on Tables of Constants and Numerical Data, Nuclear Data Group
Conference on a Hemoglobin Standard
Advisory Committee, Federal Construction Council, Task Group T-5
- 27 Subcommittee on Blood and Related Problems, Conference on Low Temperature Preservation of Red Blood Cells
Subcommittee on Radiochemistry, *New York City*
- 27-28 Screening Committee for Postdoctoral Fellowships in Biology and Agriculture
- 28 Federal Construction Council, Operating Committee
- 29 Subcommittee on Oncology
- 30 Screening Committee for Postdoctoral Fellowships in Anthropology and Psychology
- 30-Feb. 1 Screening Committee for Postdoctoral Fellowships in the Physical Sciences

February

- 1 Subcommittee on Water Supply
- 2 Committee for Research in Problems of Sex
Low Temperature Materials Panel
Advisory Committee on International Technological Assistance, Special Panel on the Utilization of Waste Gases in Saudi Arabia
Division of Physical Sciences, Executive Committee
- 4 Committee on Fabrics for Body Armor
Gun Liner Panel, Chrome Plating Sub-panel, *Columbus, Ohio*
Committee on Economics and Parking
- 5 Climatic Research Committee
Committee on Dentistry
Subcommittee on Biochemistry
Subcommittee on Biology
Subcommittee on Clinical Investigation
Subcommittee on Etiology and Pathology
Subcommittee on the Nervous System
- 8 Advisory Committee, Federal Construction Council, Task Group T-5
Subcommittee on Personnel and Training

February

8-9

Advisory Committee on Artificial Limbs, Lower Extremity Research and Development Panel, *Oakland, Calif.*

9

Guided Missiles Materials Panel Committee on Tables of Constants and Numerical Data, Nuclear Data Group

10

Advisory Committee on Artificial Limbs, *Berkeley, Calif.*
Subcommittee on Atmospheric and Industrial Hygiene
Advisory Committee, Federal Construction Council
Federal Construction Council, Advisory Committee and Operating Committee, Joint Meeting
Division of Anthropology and Psychology, Executive Committee, *New York City*
Ad hoc Subcommittee on Canned Bread Problems, *Chicago*

11

Committee on Psychiatry and Subcommittee on Stress, Joint Meeting
Subcommittee on Hand Functioning and Handwear

11-13

Advisory Committee on Artificial Limbs, Upper Extremity Research and Development Panel, *Los Angeles*

12

Committee on Radiology
Building Research Institute, Membership Committee, *Cleveland, Ohio*

13

Food Protection Committee
Committee on Animal Nutrition, Subcommittee on Feed Adjuvants, *Chicago*
Office of International Relations, Policy Committee

14

National Academy of Sciences-National Research Council, Governing Board

15

Committee on Definitions and Standards of Identity for Foods, *New York City*
Division of Earth Sciences, Executive Committee
Ad hoc Conference on Antibiotic Reserves and Subcommittee on Infectious Diseases and Chemotherapy, Joint Meeting
Committee on Science in UNESCO

February

16

Committee on Condensation Control

Committee on Tables of Constants and Numerical Data, Nuclear Data Group

16-17

Committee on Ship Structural Design

17

Subcommittee on Radiation Sterilization, *Chicago*

Subcommittee on Nuclear Reactors, *Oak Ridge, Tenn.*

18

Conference on Coastal Geography
Ad hoc Subcommittee to Evaluate the Armed Forces Food Research and Development Program, *Chicago*

Manganese Panel, *New York City*
Conservation Committee for Micronesia, Honolulu Panel, *Honolulu, T. H.*

19

Advisory Committee, Federal Construction Council, Task Group T-2

Committee on Geography, Advisory to ONR

22, 26

Subcommittee on Food Supply
National Science Foundation, Final Graduate Evaluation Board

23

Subcommittee on Animal Reservoirs and Vectors of Disease and Army Committee for Insect and Rodent Control, Joint Meeting

Committee on Tables of Constants and Numerical Data, Nuclear Data Group

Steering Committee for Oceanographic Convocation

23-25

National Science Foundation, Graduate Fellowship Screening Panels
National Science Foundation, Postdoctoral Fellowship Evaluation Board

24

Invertebrate Consultants Committee for the Pacific, *Honolulu, T. H.*

25

Subcommittee on Nutrition, Symposium on Methods for Evaluation of Nutritional Adequacy and Status, *Chicago*

25-26

Committee on Astronomy, Advisory to ONR

26

Committee on Growth, Section on Fellowships

26-27

Ad hoc Policy Committee on Artificial Sweeteners, *Chicago*

27

NEW PUBLICATIONS

- Atlas of Tumor Pathology.* Section II, Fasc. 5, *Tumors of the Soft Tissues*, by Arthur Purdy Stout. 1954. 138 p. \$2.00. Washington, Armed Forces Institute of Pathology.
- Atoll Research Bulletin.* No. 27. Pacific Science Board, National Academy of Sciences—National Research Council. January 1954. 239 p.
- Automobile Parking in the United States.* Highway Research Board Bibliography No. 14. Academy—Council Publication No. 297. 1954. 126 p. \$1.35.
- Chemical-Biological Documentation: A New Approach*, by G. Congdon Wood. Chemical-Biological Coordination Center, National Research Council. (Reprinted from AIBS Bulletin, October 1953). 3 p.
- Current Road Problems. Recommended Practice for Snow Removal and Treatment of Icy Pavements.* No. 9-3R. 3rd rev. Highway Research Board, National Academy of Sciences—National Research Council. January 1954. 19 p. \$0.30.
- Engineering Applications of Soil Surveying and Mapping.* Highway Research Board Bulletin No. 83. Academy—Council Publication No. 293. 1953. 73 p. \$1.05.
- Mechanization of Roadside Operations.* Highway Research Board Special Report No. 16. Academy—Council Publication No. 289. 1953. 37 p. \$0.60.
- Nutrient Requirements for Domestic Animals. Nutrient Requirement for Swine.* Academy—Council Publication No. 295. Rev. August 1953. 28 p. \$0.50.
- Present Needs for Research on the Use and Care of Natural Resources.* Academy—Council Publication No. 288. 1953. 35 p. \$0.50.
- Roadside Development.* Highway Research Board. Academy—Council Publication No. 286. 1953. 81 p. \$1.35.
- Societies Cooperating with The National Research Council.* February 1954. *Officers and Meetings.* Library, National Academy of Sciences—National Research Council. 1954. 47 p.

Notice of Academy Meetings

NATIONAL ACADEMY OF SCIENCES

Annual Meeting, Washington, D. C., April 26-28, 1954

Autumn Meeting, Columbia University, November 8-10, 1954

NATIONAL ACADEMY OF SCIENCES—NATIONAL RESEARCH COUNCIL

Governing Board, Washington, D. C., April 25, 1954

Governing Board, Washington, D. C., June 30, 1954

V
Z
M
A
P
A
P
P
5
4

XU